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IDEA-2772-65
Copy 10 of 10

29 September 65

MEMORANDUM FOR THE RECORD

SUBJECT : Briefing on Hycon "H" Camera

1. A briefing on characteristics and limitations of the Hycon "H" camera was given by [] on 27 September to representatives of OSA staff components.

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2. The camera is a 66' f 5.0 folded system with a 4.5" square format, a focal plane shutter, a stable platform and an oblique indexing mirror infinitely variable through an arc of 140° for lateral coverage. A remote handcontrol (MK III A) selects any of 4 operational modes and controls shutter speeds oblique aiming angle and IMC in conjunction with the drift sight. All other functions are preselected or automatically compensated for in the camera. One roll of 5" x 2000' SO 206 thin base film gives 4800 exposures or 836 N. miles of range 1.4 N. miles wide in mode 4, (double frame) and 1673 N. miles in mode 2 (single frame) .78 miles wide, at 70,000 absolute altitude. Ground resolution on optical axis in vertical is 6 to 8 inches medium contrast.

3. Limitations of the equipment include:

a. Weight - 617 lbs. including film, stable platform, and mounting bracketry but excluding windows and pilots driftsight hand control.

b. Lateral coverage .78 to 1.4 nautical miles depending upon mode.

c. Installation clearance between the vehicle and the camera is so small that excessive roll pitch or yaw will cause the stable platform to cage and introduce image motion due to vibration and incorrect V/H.

d. The camera can be pointed at 70° either left or right of the flight path, which provides an acceptable distance from the target (31.6 N.M.) and the drift



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IDEA-2772-65

sight is simultaneously pointed at a position sufficiently in advance of the target and 70° off flight path to permit target coverage, however, with the present drift sight the driver cannot see the target at these distances under average haze and cloud conditions unless it is very large and of high contrast.

e. Since the camera is referenced to true vertical and the drift sight is referenced to the aircraft the optical axes of the drift sight and the camera will coincide only when vehicle is in classic flight attitude and the axes will vary by the amount of roll pitch and yaw components that are introduced.

f. The configuration as it is now employed does not permit the use of a tracker camera which imposes a serious limitation on the photo interpreter since he does not have correlating horizon to horizon coverage for use in pin-pointing the location of the scene on the 4.5" frame.

25X1A 4. Probably the most serious limitations in the application of this configuration to our problem is weight of the system and inability of the driver to see the target. A weight reduction of about 175 pounds can be realized by substituting an f 5.6 lens of improved design and using other light weight components. This would be available 12 to 14 months from go ahead at an ROM of [] lens and windows. As far as improving the driver's ability to see the target is concerned, Perkin Elmer have been asked to complete a 4.8 to 1 magnification optical insert that will replace the present 1 to 1 magnification system currently being used. A drift sight will be available in about three weeks for test with this capability.

5. Hycon is investigating a hand control mechanism that will permit unlocking the drift sight from the camera to permit independent search by the drift sight while retaining the angle off position of the camera.

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[]
Sensor Systems Division
(Special Activities)

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